

Properties of the tangent: (Describe what you see on your graph)

Domain:

Range:

Where are x-intercepts located?

Where are asymptotes located?

Any symmetry?

How long before its pattern repeats?

Homework: (Attach on a separate sheet of paper)

Describe the transformations of  $y = \sin x$ ,  $y = \cos x$ , or  $y = \tan x$  for each function and state period, amplitude, line of oscillation, location of asymptotes where appropriate.

1.  $y = 3 \sin(x - \frac{\pi}{6})$

5.  $y = 6 + \tan(x - \frac{\pi}{4})$

2.  $y = 2 + \cos(2x + \frac{\pi}{2})$

6.  $y = -\tan x$

3.  $y = -5 \cos x + 7$

7.  $y = 1 + \sin(\pi x - 3\pi)$

4.  $y = -3 + \frac{1}{2} \sin(6\pi - 2x)$

8.  $y = -2 + \sin(\frac{\pi}{2} - x)$

Sketch the following graphs. Make sure your scale on both axes is clearly labeled for 2 cycles.

9.  $y = 3 \sin x - 1$

12.  $y = 1 + \sin(x + \pi)$

10.  $y = -\tan x$

13.  $y = -2 \sin(\pi x)$

11.  $y = 3 - \cos(x + \frac{\pi}{4})$

14.  $y = 3 \cos(-2x)$